DOCUMENT RESUME

ED 430 523 IR 019 493

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TITLE	The Nature of Teaching and Learning in the Multimedia Laboratory Classroom: Process, Activity, Problem-Solving, Engagement.
PUB DATE	1997-04-00
NOTE	8p.; In: Mid-South Instructional Technology Conference Proceedings (2nd, Murfreesboro, TN, April 6-8, 1997); see IR 019 485.
AVAILABLE FROM	Web site: http://www.mtsu.edu/~itconf/proceed97/kean.html
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Active Learning; Class Activities; Classroom Design; *Computer Assisted Instruction; Computer Centers; Courseware; Educational Technology; *Electronic Classrooms; Electronic Mail; *English (Second Language); Higher Education; Internet; *Learning Laboratories; Learning Processes; *Multimedia Instruction; Problem Solving; Second Language Instruction; Student Evaluation; Student Role; Teacher Role; Teaching Methods
IDENTIFIERS	Kean College of New Jersey

ABSTRACT

In Spring 1996, the author sought and received funding for a multimedia interactive laboratory classroom that would serve English as a Second Language (ESL) students at Kean College (New Jersey) from their beginning level course work through their advanced studies in composition and research. Reasons for seeking funding were many, the most compelling being the nature of teaching and learning in the college's ESL program and the literature on computer-assisted learning. An overview of the project, from its conception to implementation, is provided. Special emphasis is placed on the facility itself as it has transformed the teaching and learning experiences of those using it. Comments about teaching and learning highlight activity and engagement, active learning, the roles of teachers and students, broadening the scope of knowledge, and assessment. The discussion includes descriptions of special class activities, software, and use of e-mail and the Internet for instruction. Information presented is applicable across content areas and skill levels. (Author/MES)

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ED 430 523

The Nature of Teaching and Learning in the Multimedia Laboratory Classroom: Process, Activity, Problem-Solving, Engagement

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Abstract

In Spring 1996, I sought and received funding for a multimedia interactive laboratory classroom that would serve ESL students from their beginning level course work through their advanced studies in composition and research. Reasons for seeking funding were many, the most compelling being the nature of teaching and learning in the College's ESL Program and the literature on computer-assisted learning. An overview of the project, from its conception to implementation, follows. Special emphasis is placed on the facility itself as it has transformed the teaching and learning experiences of those using it. The discussion includes descriptions of special class activities, software, and use of e-mail and the Internet for instruction. Information presented is applicable across content areas and skill levels.

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Introduction: Project Design

In Spring 1996, I sought funding from the State, through its Language Minority Student Grant Program, to develop a classroom with state-of-the-art hardware and software which would transform the College's ESL Program into a model for computer-assisted interactive language learning. The philosophy and mission of the Program presented, it seemed, an optimal environment for implementing a project of this nature successfully. The Program stresses active learning, student engagement and responsibility, self-reflection, empowerment, and contextualized learning so that its students will develop the capacity to monitor their work, retain and use what they study, and relate it to their long-term goals. The Program's faculty and staff attend to individual students' learning styles and strategies. Overall, it seemed that practices in the Program
would be compatible with and enhanced by a technological environment which would place students at work stations to emphasize critical thinking, problem-solving, and self-monitoring and to engage them

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in active learning; would enable teachers to "tap into" their students' work via a server and appropriate software in order to respond to language in process rather than language products; would offer students and teachers opportunities to write, revise, and read together via appropriate software and a projection screen in order to expose, examine, and strengthen strategies for reading and writing; would foster the decision-making collaborative activity involves without creating biases or imposing penalties.

From the start, project design focused on equipment that would expose the students' language learning processes and skills and enable the teacher to model language forms in use. In light of important literature, technology was perceived as an integral part of a curriculum for fostering language rather than an add-on or supplement in the tradition of the word processing computer lab outside class time, from which students developing their language skills, especially ESL students, derive little benefit. (Ching, 1990) Incorporated into the project's design were certain specific goals for students: to develop English language skills in all areas: reading, writing, listening, and speaking to compete in both the academic environment and the work place; and to measure these skills through the in-house pre- and post- measures the Program currently utilizes; to participate in interactive, computer-assisted language learning activities to gain self-confidence as well as linguistic competence; to receive a full orientation to the laboratory's hardware and software; to use the laboratory's equipment to practice reading, writing, and critical thinking skills; to receive immediate feedback about skills development through both the interactive software and input from others through a server; to improve, as a result of immediate feedback, individual self-monitoring and self-assessment skills; to review and respond to literature about technology; to understand technology as a tool for learning, communicating, and competing in the work place; to overcome, in cases where applicable, any pre-existing, negative views about technology; to become familiar and comfortable with the laboratory in order to recognize its significance to their success in both the ESL Program and the content areas; to participate in collaborative learning exercises to understand the challenges and benefits of team work; to discover individual learning strategies and skills for improved academic performance both within and outside the ESL class.

With notification of funding in Summer 1996, the Program's faculty and staff began the process of creating the laboratory classroom and meeting the goal of integrating technology into instruction.

Implementation: Facility Design and the Classroom Experience

The Facility

At the moment, the laboratory classroom is in a temporary location, which is actually too small for the furniture and equipment the ideal lab would have. With the announcement of the grant award, the lab was established in a room already wired for equipment. Plans are underway to renovate a larger room for the lab prior to the start of the 1997-1998 academic year. When the lab is re-located, it will be fully furnished.

In its current state, the lab is furnished with 20 work stations for students. These stations house CD ROM PC's which are nested inside the work stations under a view-thru glass. Keyboards rest on pull-out trays. The computers' central processing units are specially-designed to stand on their sides, length-wise, in cabinets on the side of the work stations. Unlike labs with desk-top computers, this facility frees the work surface so that teachers and students do not feel compelled to use computers for an entire class period or have equipment interfere with normal classroom activity, such as discussion or work in pairs. Most important, the recessed equipment makes the students visible to the teacher. They are not hidden behind PC monitors. Furthermore, the furniture facilitates interaction among students, it gives them the choice to use paper and pen for class activities when desired, and it places them in the natural position for composing--with their heads bent downward rather than tilted upward.

Right now due to limitations in space, the students' work stations are arranged in 2 islands of 10 units, with 5 work stations in one island facing another 5 stations. Face to face and sitting side by side,

students interact a great deal more than they do in the traditional lecture-style classroom. This is particularly noticeable to those teachers and students whose classes meet in the lab one day a week and in a lecture-style room for a second weekly meeting.

A new lay-out for the lab will be developed with its re-location for Fall 1997; a proposed design will be to have 5 groups of 4 work stations in which 2 work stations face another 2 work stations.

Other changes for Fall 1997 include the installation of a white board, the set-up of a desk-top projector, the addition of a locking case for manuals and reference materials, and the addition of the teacher's station, a full-sized work station with a view-thru glass. Funds for these are currently available; space is not.

An additional computer in the room now serves as a virus scanner and as the teacher's work area. It rests on a traditional-style desk. Students disinfect their disks in this unit before inserting them into the computers at their work stations. Teachers utilize this additional computer to interact with and monitor individual students in electronic conference-like activity through various classroom management applications. All computers in the room are linked to a hub, which connects the lab's equipment to the room's laser printer and a server. The facility's server is located off-site in a technical assistant's office area. This server links the classroom to the College's network, making the use of e-mail possible and establishing access to the Internet via Netscape. Over time with additional software applications, the server will transform the classroom further into a complex self-contained as well as global communications network.

What makes this lab unique is the way in which technology assumes a central role. The equipment is visible and accessible at all times. It leaves users with the impression that technology is an important part of the classroom experience. It is part of each course's content; it is also a medium through which students access other material relevant to the course and practice reading, writing, listening, and speaking skills.

This laboratory classroom is open six days a week: Monday through Thursday, 8:00am through 10:30pm; Friday, 8:00am through 3:00pm; and Saturday, 10:00am through 4:00pm. Instruction takes place in the lab the majority of the time. When classes do not meet in the lab, open hours are held. Currently, the lab is open to walk-in traffic 171/2 hours per week. During these hours, scheduled events as well as drop-in practice for both students and teachers take place. Scheduled events include keyboarding classes for students who lack typing skills, tutorials, training for lab assistants, and faculty workshops. A technical advisor and I train the lab assistants. Topics covered include responsibilities, certain technical skills, engaging/disengaging the alarm, security issues, and review of software applications for classroom practices.

In the classroom, lab assistants share their knowledge with teachers; they work together to develop a technological component for instruction.

Faculty workshops fall into two categories--large orientation sessions, where information about procedures, software, and classroom practices is shared and opportunities for hands-on practice exist. Smaller practice sessions target specific areas that will help faculty improve their skills and/or develop course materials. Small practice sessions review e-mail and/or the Internet at the introductory, intermediate, and advanced levels; they focus on specialized topics like how to prepare a pie graph; they review software for specific skills and levels; and they offer hands-on practice.

Walk-in traffic during open hours has kept the lab at an 80% occupancy rate when classes are not in session. Faculty stop by for practice or to prepare lessons. Students stop by to work on papers or assignments, to check their e-mail, or to browse the Internet.

An Overview of Classroom Experiences

On a day-to-day basis, the ESL students at Kean College engage in a number of activities grounded in technology. With the passing of time, we have begun to see patterns of activity for particular skill areas and levels. At the same time, we see variation in what occurs in our different courses. Students' as well as teachers' orientations to technology and individual instructors' perspectives on how technology relates to instruction explain the differences we see. We do not regard these as detrimental to learning since we have only begun to implement this project and since we recognize that individual differences across teachers and students will always impact the nature of instruction.

Regardless of the course and level, however, students who have class in the lab are enthusiastic about the opportunity to use technology for learning activity. It is clear that using technology is a new experience for many students at the high-beginner level. While some are facile with the equipment, the majority need an orientation to a range of procedures and practices, from formatting a disk to saving on a disk to creating files and inputting as well as revising text. At this level, students use the equipment for dictation exercises, to free-write or brainstorm, and to compose essays. These students will receive an introduction to e-mail and often enjoy their first access to the Internet. Their faculty have the opportunity to review and try appropriate writing/grammar software.

Technology is a more integral component in the intermediate and advanced courses. Even though some students at this level are developingtheir technical skills, technology plays its role in instruction in a number ofways. It must be noted that those students who lack computer skills are not left behind at any time. Capable lab assistants staff the facility, offering individualized support for users.

Technology emerges as an essential element at the intermediate and advanced levels, for writing is the focus of all course work. Communication is stressed. Students and teachers use e-mail for distributing syllabi, for submitting and responding to assignments, for offering a preview of the next class meeting, to obtain information about class protocols, such as group assignments for an upcoming peer session, tutorial assignments, or work covered during an absence from class. E-mail also supports global interaction.

Additionally, students access the Internet to participate in chat rooms or to obtain supplemental reading material, and they utilize software for practice with writing. They enjoy the benefits of software that enables teachers to comment on their students' work electronically. From the comment function on Word Perfect to applications like CommonSpace, which divides documents into columns to allow for writing and responding activity from self and others, to applications like Dadaelus, which creates a mail exchange among members of one class, provides prompts for brainstorming, and includes a function for formatting documentation in research papers, teachers have found that technology offers students hands-on, individualized practice at a rate they can handle as well as enjoy. Complementing the software purchased is the vast number of language skills practice exercises that can be downloaded from the Internet.

Teachers also author their own course work. At the moment, our efforts in this area are quite primitive; we prepare disks for installation on the server and have students access them during class time. We are also reviewing ToolBook 2, which is licensed to the College and realizing its potential, as well that of the authoring formats available on the Web.

Nowadays, students are likely to submit work on disk or save it in a common class directory. Course work in composing involves writing, revising, editing, and peer collaboration, all of which are supported effectively in this technological environment. More oriented to computers, students at these levels not only produce their texts; they also work on their presentation and develop elaborate cover pages as well as appropriate visuals.

The laboratory classroom plays a unique role in one specific course in the Program: the research course. Equivalent to a general education requirement, this course enables students to develop requisite investigative skills while continuing to hone their language skills. The lab plays an important role in this course. First, students at this level most likely have experience with computers. Second, the emphasis on

research makes access to the Internet relevant. In the most technologically-advance course sections, students practice importing information from the Internet and paraphrasing, summarizing, and directly quoting it. Students begin to understand how to forward mail and include attachments, recognizing why someone may have the need to perform these actions. They get hands-on practice with the process of integrating texts and documenting sources. Supporting this work is the writing software with documentation functions, which has already been mentioned. Third, since course requirements have students investigating topics and reporting findings, students discover the importance of charts, tables, and graphs. They develop these products in the research class, enhancing their technical skills and, more importantly, coming to a fuller understanding about how to interpret information plotted on visuals.

Across levels, there are common experiences as well as subtle distinctions in the use of technology. Generally, teachers find that students engage in and respond to learning activity in this technological environment, that they interact more readily with others, and that they enjoy opportunities--especially through software and with help from lab assistants--to work at their own pace and level. Additionally, the students in the Program have found that opportunities to enhance their technical skills exist outside class time.

Comments about Teaching and Learning

Activity and Engagement

Few discussions about educational practice take place without mention of John Dewey. To many readers, his insights on education leave quite an impression. In his time, Dewey argued against developments in mass education, observing students' detachment and expressing his belief that they were passive in the classroom--empty vessels waiting to be filled. Dewey described ideal learning situations where materials were authentic, instruction was student-centered, lessons involved doing, and teachers served as mentors or facilitators. (1916) Today, we continue to move towards process instruction, which parallels Dewey's insights. Certainly, in the experience of creating, implementing, and teaching in the laboratory classroom, I have seen how technology is a critical tool for achieving the ideals Dewey envisioned. No matter how little or how much exposure students have to technology, a curiosity as well as certain positive assumptions about it exist. To use any part of it requires action, and it has seemed that when students act--when they take that step to use the equipment available to them--they connect with the classroom experience. Students are stimulated further when they realize that learning through technology offers more options than the traditional classroom experience can.

The Roles of Teachers and Students

Assuming an active role in the classroom, students are more visible, and oftentimes, they are more vocal as well. In Kean's lab, where the physical lay-out places students in work teams for learning, there is a great deal of interaction. With learning activity taking place due to the students' active role in the class, teachers find their role undergoing a transformation. In the environment described in these pages, teachers no longer find themselves performing the "one-woman/man show" for an entire class period. Rather, in addition to providing certain lessons and presentations, teachers find themselves circulating among students, checking certain assigned tasks. Also, the teachers find that they are responding to writing as it is being produced. They guide the process rather than grade a paper after it is written and leave their students with overwhelming and unmanageable revision tasks. Additionally, these teachers oversee group projects and sit with different teams to hear their progress reports. Teams eventually report on their work, taking some responsibility for class instruction into their own hands. Instructors find that they are able to conduct conferences during class at times, record notes about individual students' progress, orient groups to the next phase of learning activity, and shape curriculum for the next day, week, or month.

In classrooms where learning activity rather than the transmission of information takes place, teachers experience a new role as facilitator and mentor. In this capacity, they are able to monitor individual students, which, in turn, makes students themselves assume more responsibility with regard to the

course, its expectations, and its requirements. People who have experienced this new role in the classroom have found it both refreshing and rewarding.

The Nature of Knowledge

With a focus on activity and with both teachers and students involved in learning processes, the laboratory classroom has broadened the scope of knowledge in the domain. While the traditional class shaped the knowledge to be studied, making it feel fixed and rigid, the laboratory classroom is open to the pursuit of knowledge. In this context, knowledge appears dynamic and can be perceived as authentic as well. Certainly, fundamental principles about language guide instruction. However, the many options for learning make it possible for individual students to access new information relevant to the topic under review. Discovery occurs in the laboratory classroom. It introduces a critical thinking component; students find themselves reporting the information they access, evaluating its significance, connecting it to other information, and integrating it into their conceptual framework for the course.

A Few Words about Assessment

Teaching in the laboratory classroom introduces unique questions about assessment. When instructors participating in the project were asked to describe their students' progress, they spoke in qualitative terms. Consistently, instructors' evaluations stress how technology has enabled their students to produce more language, to concentrate on global rather than local problems, to revise frequently, to take risks, and to incorporate sweeping changes into their final drafts. Additionally, instructors indicate that due to their opportunities to practice writing on certain applications, students' abilities to develop ideas, to know their personal strategies and skills, and to monitor their work showed significant improvement.

The data the faculty participating in the project offer are not the standard pre- and post- test score statistics. Rather, they are comments which capture the quality of what their students tend to do. Their evaluations, which focused on learning processes rather than course products, suggest that instructional technology can play a significant role in our efforts to reform assessment in education.

Closing

The ESL Laboratory Classroom has kept the faculty busy this year. It has opened instruction to a vast range of techniques and an ever changing content base available through the Internet. Everyone involved has come to understand the magnitude of the project and the time it will take to integrate technology fully into the Program's curriculum. The faculty remain enthusiastic and adventuresome, realizing this facility can be enhanced further. Along with current efforts to create the laboratory classroom proposed for the grant award, I will continue to seek funding to support enhancements we are enable to envision today. Specifically, we see the need to support our teachers' ability to participate in the project. Teachers' authoring stations, which consist of notebook computers, would give all teachers fair opportunities to develop course materials regardless of the type of equipment they have at home. Additionally, the current facility, whose ultimate purpose is to integrate all language skills, is heavily oriented to reading and writing. There is the need to explore its potential for oral skills practice, to obtain microphones and headsets, and to examine as well as select software for this aim. Since the lab's critical component is its interactive nature, we also seek sophisticated software to extend collaboration in the classroom beyond the composing process. Certain GROUPWARE applications are under review for this purpose. Together, these enhancements will transform the laboratory classroom into an extraordinary facility for teaching and learning.

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